

Applicant: Joseph A. Kwak
Application No.: 10/084,043

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for adjusting data modulation at a base station comprising:

receiving data in data blocks from a higher layer ARQ mechanism at a physical layer transmitter for transmission;

formatting the received data blocks into packets for transmission, the packets being smaller in size than the data blocks, and each packet having a forward error correction (FEC) type of encoding/data modulation;

appending an error check sequence for each packet;

providing a physical layer ARQ mechanism performing steps including:

transmitting the packets;

storing the packets for retransmission in a buffer memory incorporated into the physical layer transmitter;

monitoring a return channel for receipt of an acknowledgment for each packet that the packet has been received;

limiting the number of retransmissions to an operator-defined integer value;

Applicant: Joseph A. Kwak
Application No.: 10/084,043

clearing the buffer memory after the integer value is reached; retransmitting an original or selectively modified packet at the physical layer transmitter in response to a failure to receive a corresponding acknowledgement for a given packet; wherein the physical layer ARQ mechanism and physical layer transmitter operate transparently with respect to the higher layer ARQ mechanism;

receiving and demodulating received packets at a physical layer receiver;

receiving a corresponding acknowledgement for a given packet at the physical layer receiver, wherein a mechanism configured to receive the corresponding acknowledgement for the given packet operates transparently with respect to the higher layer ARQ mechanism;

collecting retransmission statistics and adjusting the particular data/modulation using the collected statistics at an adaptive modulation and coding controller; wherein if the collected retransmission statistics indicate a low number of retransmissions, a higher capacity encoding/data modulation scheme is selected as the particular encoding/data modulation and if the collected retransmission statistics indicate a high number of retransmissions, a lower capacity encoding/data modulation scheme is selected as the particular encoding/data modulation;

Applicant: Joseph A. Kwak
Application No.: 10/084,043

buffering, decoding, and detecting packet errors at a combiner/decoder;
and

generating an acknowledgement for each received packet in an
acknowledgment generator if that packet has an acceptable error rate; and

selectively nulling subchannels from an OFDM frequency set wherein
the use of a poor quality subchannel is precluded for a predetermined period
and adding a previously nulled subchannel back into the OFDM frequency
set where a retransmission rate or link quality indicates a high quality for
the previously nulled subchannel.

2. Canceled.

3. (Previously Presented) The method of claim 1 wherein the packets are
transmitted using an orthogonal frequency division multiple access (OFDMA) air
interface and the particular FEC encoding/data modulation adjusting is performed
in addition to selective nulling of subchannels in an OFDMA set.

4. (Original) The method of claim 1 wherein the packets are transmitted
using a single carrier having a frequency domain equalization (SC-FDE) air
interface.

Applicant: Joseph A. Kwak
Application No.: 10/084,043

5. (Original) The method of claim 1 wherein the return channel is the fast feedback channel when the packets are transmitted using a code division multiple access (CDMA) air interface.

6. (Original) The method of claim 1 further comprising:
identifying a packet as having an unacceptable error rate responsive to receipt of a negative acknowledgment.

7 - 9. (Canceled).

10. (Previously presented) The method of claim 1 wherein the physical layer ARQ mechanism reduces retransmissions required by the higher layer ARQ mechanism.

11. (Canceled).